

Web of Science®

[<< Back to results list](#)

Record 2 of 10

Record from Web of Science®

A combined osmotic pressure and cake filtration model for crossflow nanofiltration of natural organic matter

[Print](#) | [E-mail](#) | [Add to Marked List](#)
[Save to EndNote® Web](#) | [Save to EndNote®, RefMan, ProCite](#)
[more options](#)

Author(s): [Mattaraj S](#) (Mattaraj, Supatpong)¹, [Jarusutthirak C](#) (Jarusutthirak, Chalor)², [Jiratananon R](#) (Jiratananon, Ratana)³

Source: JOURNAL OF MEMBRANE SCIENCE **Volume:** 322 **Issue:** 2 **Pages:** 475-483 **Published:** SEP 15 2008

Times Cited: 6 **References:** 26 [Citation Map](#)

Abstract: A combined osmotic pressure and cake filtration model for crossflow nanofiltration of natural organic matter (NOM) was developed and successfully used to determine model parameters (i.e. permeability reduction factor (η) and specific cake resistance ($\alpha(\text{cake})$)) for salt concentrations, NOM concentrations, and ionic strength of salt species (Na^+ and Ca^{++}). In the absence of NOM, with increasing salt concentration from 0.004 to 0.1 M, permeability reduction factor (η) decreased from 0.99 to 0.72 and 0.94 to 0.44 for monovalent cation (Na^+) and divalent cation (Ca^{++}), respectively. This reduced membrane permeability was due to salt concentrations and salt species. In the presence of NOM, specific cake resistance tended to increase with increasing NOM concentration and ionic strength in the range of 0.85×10^{15} - 3.66×10^{15} in $\text{kg}(-1)$. Solutions containing divalent cation exhibited higher normalized flux decline ($J(v)/J(v_0) = 0.685$ - 0.632) and specific cake resistance ($\alpha(\text{cake}) = 2.89 \times 10^{15}$ - 6.24×10^{15} $\text{m kg}(-1)$) than those containing monovalent cation, indicating a highly compacted NOM accumulation, thus increased permeate flow resistance during NF filtration experiments. After membrane cleaning, divalent cation exhibited lower water flux recovery than monovalent cation, suggesting higher non-recoverable ($R_{\text{non-rec}}$) resistance than monovalent cation. (c) 2008 Elsevier B.V. All rights reserved.

Document Type: Article

Language: English

Author Keywords: cake filtration; nanofiltration; natural

Cited by: 6

This article has been cited 6 times (from Web of Science).

Javaid A, Ryan T, Berg G, et al. [Removal of char particles from fast pyrolysis bio-oil by microfiltration](#) JOURNAL OF MEMBRANE SCIENCE 363 1-2 120-127 NOV 1 2010

Mattaraj S, Phimpha W, Hongthong P, et al. [Effect of operating conditions and solution chemistry on model parameters in crossflow reverse osmosis of natural organic matter](#) DESALINATION 253 1-3 38-45 APR 2010

Jacob M, Guigui C, Cabassud C, et al. [Performances of RO and NF processes for wastewater reuse: Tertiary treatment after a conventional activated sludge or a membrane bioreactor](#) DESALINATION 250 2 833-839 JAN 15 2010

[[view all 6 citing articles](#)]

[Create Citation Alert](#)

Related Records:

Find similar records based on shared references (from Web of Science).

[[view related records](#)]

References: 26

View the bibliography of this record (from Web of Science).

Suggest a correction

If you would like to improve the quality of this product by suggesting corrections, [please fill out this form](#).

organic matter; osmotic pressure

KeyWords Plus: FLUX DECLINE; MEMBRANE FILTRATION;
REVERSE-OSMOSIS; NOM; REJECTION; CHARGE;
REMOVAL; WATER

Reprint Address: Mattaraj, S (reprint author), Ubon
Ratchathani Univ, Dept Chem Engr, Fac Engr, Ubon
Ratchathani 34190, Thailand

Addresses:

1. Ubon Ratchathani Univ, Dept Chem Engr, Fac Engr,
Ubon Ratchathani 34190, Thailand
2. King Mongkuts Inst Technol Ladkrabang, Dept Chem,
Fac Sci, Bangkok 10520, Thailand
3. King Mongkuts Univ Technol Thonburi, Dept Chem Engr,
Fac Engr, Bangkok 10140, Thailand

E-mail Addresses: mattas@ubu.ac.th, kjchalor@kmitl.ac.th,
ratanaajr@kmutt.ac.th

Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE
AMSTERDAM, NETHERLANDS

Subject Category: Engineering, Chemical; Polymer Science

IDS Number: 345DR

ISSN: 0376-7388

DOI: 10.1016/j.memsci.2008.05.049

[<< Back to results list](#)

◀ Record 2 of 10 ▶

Record from **Web of Science®**

Output Record

Step 1:

- Authors, Title, Source
 plus Abstract
- Full Record
 plus Cited Reference

Step 2: [\[How do I export to bibliographic management software?\]](#)

[Print](#) [E-mail](#) [Add to Marked List](#) [Save to EndNote® Web](#)
[Save to EndNote®, RefMan, ProCite](#)
[Save to other Reference Software](#) [Save](#)

View in [简体中文](#) [English](#) [日本語](#)

Please give us your [feedback](#) on using ISI Web of Knowledge.

[Acceptable Use Policy](#)
Copyright © 2010 Thomson Reuters



THOMSON REUTERS

Published by Thomson Reuters